

Individualized Community-Led Drinking Water Supply Projects in Rural Nepal:

A More Effective and Sustainable Methodology than Generalized Approaches

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ABSTRACT: Despite access to water being a human right upheld by the United Nations, many residents in Nepal have limited access to safe drinking water due to factors including insufficient government assistance, the country's mountainous topography, and devastating natural disasters. This paper examines the differences in effectiveness and sustainability in clean drinking water supply (DWS) systems in rural areas of the country that are either provided by the government or by local and international Non-Governmental Organizations (NGOs). I argue that drinking water supply projects that are conducted using an individualized community-led methodology by international and local NGOs working in partnership are more effective and sustainable than generalized methodologies often employed by the government, and positively contribute to other areas of development including gender equality. To do this, I look specifically at the approaches taken by the NGOs Nepal Water for Health (NEWAH) and Engineers Without Borders (EWB) in providing drinking water supply systems to rural communities in Nepal. Critically examining the outcomes of the differing methodologies that are employed to provide access to clean drinking water in this context is important in facilitating the achievement of the United Nation's Sustainable Development Goal of safe and affordable drinking water for all.

KEYWORDS: Clean water, community-led, drinking water supply, Engineers Without Borders, Nepal, Nepal Water for Health, Non-Governmental Organizations, rural, United Nations, water sanitation and hygiene

Introduction

Nepal is a developing country in Southern Asia, located between India and China in the Himalayan mountains. Although it is “one of the world’s most water-abundant countries” (Biggs et al. 2013, 389), Nepal struggles to provide clean water to its residents, especially those in rural mountainous regions (Biggs et al. 2013, 388). Access to safe drinking water “is regarded as one of the essential factors that influence livelihoods in rural communities” (Komatsu et al. 2020, 7910), and the United Nations (UN) recognizes access to water as a human right (United Nations n.d.-a). Goal 6.1 of the UN’s Sustainable Development Goals aims to achieve “universal and equitable access to safe and affordable drinking water for all” (United Nations n.d.-b), but several challenges make the achievement of this goal and human right quite difficult in Nepal. However, International Non-Governmental Organizations (INGOs) such as Engineers Without Borders Australia (EWB) and local Nepali NGOs such as Nepal Water for Health (NEWAH) are working to make safe drinking water a sustainable reality for rural populations in Nepal, by providing infrastructure and education through community-led methodologies that adapt to the needs of each community. Although these individualized development projects may be more effort-intensive than one-size-fits-all, generalized methodologies which apply a single system in many areas with minimal alterations, they provide long-lasting and effective development assistance to often left-behind rural communities.

This paper argues that in the pursuit of safe drinking water for rural populations in Nepal, drinking water supply (DWS) projects that are conducted using a community-led methodology by international and local NGOs working in partnership are more effective and sustainable than generalized methodologies often employed by the government, and positively contribute to other development goals including gender equality and empowerment of women. To make this argument, the paper first provides contextual information on the country of Nepal and its relationship with safe and sustainable water supply for its residents. Following this, it discusses actions taken by the government of Nepal to provide drinking water to the country’s rural communities and some of the shortcomings of the government’s one-size-fits-all response including its inefficiencies and lack of sustainability. Subsequently, it explores the contrasting efforts of EWB and NEWAH working in partnership to provide DWS projects and education to rural residents using a community-led methodology that encourages project effectiveness and sustainability. Finally, it presents information on the ways that

community-led methodologies for DWS projects facilitate the empowerment of women and increased gender equality.

Context of Nepal

Nepal has struggled with instability over recent decades, due in large part to political upheaval and devastating natural disasters (Domínguez, 2015). Both factors contribute to the country’s failure to utilize its abundant natural resource of water as a supply of clean drinking water. Nepal’s political instability stems most from its 1996-2006 civil war, after which the country’s monarchy was abolished and the first president was elected (Central Intelligence Agency n.d.). Since then, there have been frequent changes in government leaders which have had “a continuing detrimental impact on effective governance and policy continuity within the country” (Biggs et al. 2013, 389). Additionally, because of Nepal’s geographic location on a tectonic faultline, it is prone to earthquakes that can cause immense damage (Domínguez, 2015). The most devastating in recent memory occurred in April 2015, when the country was upended by a 7.8 magnitude earthquake in which over 8,700 people were killed and 500,000 homes were destroyed (The Guardian 2016). The government was criticized for being slow to deliver financial or material assistance to those in need, despite receiving \$4.1 billion in international aid and donor funds (Wolfson 2016, 16).

These factors contribute to many citizens of Nepal not having access to sustainable and safe water supplies. The “severe lack of rural infrastructure, power and technology to redistribute water to high demand areas ... is predominantly attributable to previous political interventions” (Biggs et al. 2013, 391), and political instability even led to the withdrawal of financial investment by the World Bank in the massive Melamchi Water Supply Project intended to provide drinking water to the country’s capital of Kathmandu (Rest 2018, 1207). Overall, only 17.9% of the country’s water supply systems function well and are not in need of repair (Nichols 2015, 36), a situation which was exacerbated by the destruction of nearly 5,200 water supply systems in the 2015 earthquake (Wolfson 2016, 15). These factors, among others, mean that “the majority of the population in rural areas do not have access to safe drinking water” (Wisniewski 2013, 43). The government of Nepal has taken some actions to try to address these issues, but many of their efforts have not been effective.

Actions Taken by the Government of Nepal

The Nepali government has an inherent responsibility

to provide the human right of water to its citizens, so “the fact that ‘the state’ is unable to provide its citizens with basic amenities like water and electricity has severely diminished its legitimacy” (Rest 2018, 1204). Despite many Nepali people living without access to clean water in rural areas, many government actions to address this have been insufficient or unsustainable.

Inefficient Government-led Systems

Difficulties accessing safe drinking water in rural areas are exacerbated by mountainous topography and a lack of infrastructure. Nepali people living in mountainous rural areas dedicate “substantial physical efforts to transport water along unpaved trails” (Komatsu et al. 2020, 7913) and spend hours each day on water collection activities. When the Nepali government has tried to provide financial assistance to reduce the burden of these citizens, they sometimes promote inefficiencies. The government has provided subsidy programs in Nepal to incentivize the implementation of solar-photovoltaic water pumping systems (SWPSs) which provide rural communities with a water supply (Dhital et al. 2016). However, Dhital et al. have found that the “abundant financial support from the government tends to be associated with the installation of inefficient [SWPS] systems” (2016, 11), because the subsidy unintentionally incentivizes building systems

with excessive capacity. The resources that would be saved if these systems were designed efficiently could be used to install 45% more SWPS (Dhital et al. 2016, 2). This one-size-fits-all approach demonstrates that even when the government of Nepal does provide financial support to ensure drinking water access for communities, the failure to tailor support to specific contexts may actually promote inefficiencies and thereby reduce the number of communities gaining access to safe drinking water.

Unsustainable Government-led Systems

Research on multiple DWS projects that were implemented by Governmental Organizations (GOs) indicates that over 40% of the GO-led projects in the sample experienced either unsatisfactory or very weak management (Bhandari et al. 2005, 206), perhaps owing to the GOs basing the sustainability of their projects on materials and technical knowledge which the communities did not have the ability to maintain on their own. Failing to individualize assistance to the needs of each community led to these projects being unsustainable and unsuccessful. As a result, some international NGOs have invested their own efforts into providing Nepal’s rural communities with clean drinking water, using a more effective and sustainable methodology (McMillan 2011, 191).



A Community-Led DWS Project Methodology

In the context of rural Nepal, using methodologies for drinking water supply projects that involve community members in collaborative planning, implementation, and maintenance allows for location-appropriate systems that are more sustainable and effective than generalized systems. Engineers Without Borders Australia (EWB), an international NGO, has worked on many DWS projects in rural Nepal with a focus on community-led development, and in order to meet their goal “to strengthen the capacity and effectiveness of local NGOs to improve rural communities’ access to appropriate and sustainable WASH solutions” (Engineers Without Borders Australia n.d.), EWB has partnered several times with a local Nepali NGO: Nepal Water for Health (NEWAH). NEWAH is a recognized leader in water, sanitation, and hygiene (WASH) practices in Nepal, and “a core principle of all NEWAH work is that projects must be implemented in a community-led manner” (Sapkota et al. 2012, 3). Similarly, EWB recognizes that “when communities are given control of the planning processes, they are able to direct discussions towards the core issues underpinning WASH access, and ultimately own decisions made on the project” (Engineers Without Borders Australia 2012). The government of Nepal has left a gap in rural areas in its WASH services, and NEWAH and EWB are stepping forward to fill the void (Barrington et al. 2013, 392). The partnership of these organizations allows for the technical capacities of EWB to be combined with the local knowledge and resources of NEWAH, and their joint methodology has demonstrated repeated success.

Sustainability

Bhandari et al. describe that “the major problem facing rural water supply in developing countries like Nepal is not capital cost but sustainability” (2005, 202), defined as the continued ability of a rural community to maintain their clean water system, even after support from external actors has ended. When benefactors such as the government do not engage communities in decision-making and simply implement pre-existing infrastructure without empowering and educating residents to understand their essential role in a projects’ maintenance, it is common for the provided systems to be abandoned and/or mismanaged (Bhandari et al. 2005, 202). In contrast, EWB and NEWAH projects recognize that a water safety plan (WSP) “needs to have local ownership if it is to be a successful and sustainable long-term management mechanism” (McMillan 2011, 200) and to do this, they provide education and ensure that community members play a role in each system’s

planning, implementation, and maintenance.

By providing education on WASH topics through workshops and requiring that all community members participate in the construction activities (Nepal Water for Health 2012), the community-led methodology increases sustainability. These practices encourage residents to gain knowledge about how the DWS systems operate and about the importance of continued system operation on their health and wellbeing, leading to an increased commitment by community members to maintain them. In EWB and NEWAH’s projects to implement rainwater harvesting systems (RWHS) in rural communities, it was found that “education and capacity building to ensure proper operation and maintenance of RWHS proves to be the most critical factor attributing to the successful adoption of this technology” (Nichols 2015, 37). Many of EWB and NEWAH’s projects provide education on topics such as potential hazards to water safety in the area, and locally-relevant ways to reduce these risks and monitor the quality of their water on an ongoing basis, both as a community and as individual households (McMillan 2011). The goal of the projects is to assist in empowering the community to reduce and prevent threats to a safe water supply, which allows residents to be continually engaged in the process and ensure its sustainability.

Effectiveness

In addition to being highly sustainable, there are several factors that make the community-managed methodology developed by EWB and NEWAH effective. First, because EWB and NEWAH emphasize spending time engaging community representatives to identify local hazards and pre-existing control measures for keeping water clean, context-specific barriers that would make a generalized methodology ineffective or unsustainable can be addressed and mitigated by using the community’s strengths (McMillan 2011, 193). Second, the utilization of this methodology that is designed for rural areas is also important because of the differences between urban and rural water systems. Whereas urban WSPs are designed by specialists working for a particular company that provides a consistent service, it is clear that “in rural, community-managed projects, WSPs need to be developed by NGOs, local staff and stakeholders and, most importantly, users themselves” (Barrington et al. 2013, 399) in order to be effective. Finally, as a demonstration of the success of the methodology, there has been a large uptake by other organizations. Because of the success of EWB and NEWAH’s projects, their new methodology is being shared for implementation by other NGOs in the Nepali WASH sector, and has been adopted by the World Health Organization as a recommended WSP framework for

rural areas (Barrington et al. 2013, 392, 397). Using a project methodology that encourages community input throughout the process is more effective, appropriate, and sustainable than generalized methodologies with minimal alterations.

Addressing Potential Contrary Views

There are two notable objections to consider when examining whether a community-owned methodology is the best approach to providing drinking water in rural areas of Nepal: first, is individualizing each project inefficient? And second, do community-led methodologies actually serve all community members?

Is Individualizing Each Project Inefficient?

The first objection is that investing so much time and resources into one community at a time is too effort-intensive for the limited amount of people that benefit, and that rather than individualizing each project, using a generalized approach to DWS projects is more efficient. A standardized framework that implements predetermined and consistent WSPs also allows for more projects to be completed because only minor adjustments are made for each site. In response, a clarification is needed: although the product (WSPs) of community-led projects is individualized to each context, the process utilized by EWB and NEWAH is consistent. In each case, the NGOs adapt the standardized framework of WSP steps created by the Nepali Department of Water Supply and Sewerage (DWSS) to develop an individualized WSP for the specific context of a given community (Barrington et al. 2013, 397). This makes the WSPs both replicable and customizable, and they have demonstrated repeated indicators of effective success in multiple projects by NEWAH (Barrington et al. 2013, 399). The adoption of NEWAH and EWB's methodology by the WHO for community-managed WSPs illustrates the credibility and acceptance of this approach by a major international development actor. Individualizing WSPs to each community may be less efficient in the short-term than using a generalized methodology for multiple areas, but because community-led projects have been repeatedly shown to be more sustainable, they are more efficient in the long-term than the alternative which may require frequent intervention to maintain or fix the systems.

Do Community-Led Methodologies Actually Serve All Community Members?

Secondly, it could be said that despite this methodology intending to include all community members in designing and benefiting from the systems, it may not

be effective for poor or marginalized community members. Research has identified that all residents may be expected to provide similar financial contributions toward DWS infrastructure and maintenance, which may not be feasible for the poor (Bhandari et al. 2005, 207). As this line of reasoning goes, the poor demographic may not reap the benefits that these DWS projects aim to provide to all members of a community.

While improperly managed community-led projects can fail to provide a comprehensive system that benefits all residents, NEWAH and EWB's methodology clearly incorporates steps to ensure the inclusion of socioeconomically marginalized residents through properly managed projects. As a result of their Gender and Social Inclusion Policy, at the beginning of each project they conduct a detailed household survey to "identify disadvantaged community members and thereby target efforts at inclusive decision making during project planning" (Sapkota et al. 2012, 4). This assists in determining the appropriate level of labour and financial contributions for construction and maintenance that is required of each household, to ensure the distribution is equitable (Sapkota et al. 2012, 4). NEWAH and EWB demonstrate a clear commitment to adapting their DWS projects to ensure equity through appropriate infrastructure, social inclusion, and education, resulting in comprehensive service for all community demographics.

Conclusion

Although the government of Nepal engages in projects that attempt to provide drinking water systems for rural areas or provides financial incentives for communities to do so, its generalized methodologies often lead to inefficiencies or unsustainable systems which require repeated technical and financial interventions. Engineers Without Borders and Nepal Water for Health set positive examples for the Nepali government and other organizations in their efforts to implement drinking water supply systems in rural areas, by employing a holistic and community-led methodology that uses a standardized framework to provide individualized systems for communities that best suit their needs. Applying generalized systems to multiple areas may be more efficient in the short term, but projects that include community input and education are more sustainable and therefore more effective in the long term. These projects utilize the communities' pre-existing control measures in addition to providing WASH education which empowers the community to understand the importance of the project and its success, increasing the likelihood that the implemented system will be maintained by the community. Finally, approaches to drinking water supply projects which emphasize community involvement al-



low the international and local NGOs to recognize and address socioeconomic and gender barriers that may restrict community members' access to water, helping to ensure comprehensive systems that provide water and empowerment to all members of a community. By employing community-led methodologies in drinking water supply projects, Nepal can increase the access that its rural communities have to a valuable resource and a human right.

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